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Synopsis of Audience Measurement Techniques

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1 INTRODUCTION

1 Audience measurement plays an important role for advertisers and broadcasters. *Firstly*, it helps to provide broadcasters with information relating to the viewing patterns of customers, and as a result informs decisions on programmes, scheduling advertising rates. *Secondly*, it allows advertisers to understand viewing patterns allowing informed decisions to be made on where to place advertisements to reach the correct target audience at the lowest cost.

2 While audience measurement was relatively straightforward in an era of limited analogue FTA channels, the emergence of new platforms such as DTH, DTT, IPTV and mobile has presented a challenge for the existing approaches.

3 As a supplement to our report on the Future of Television Broadcasting to 2014, we have been asked to provide the National Association of Broadcasters (NAB) with a synopsis of audience measurement methods used internationally. We have done this on the basis of desk research, and have primarily sourced information from the key international audience measurement companies. We outline some of the current audience measurement techniques and tools and the countries where they are being used. We then provide an overall assessment of how particular well-documented international markets (the UK and US) have approached audience measurement. However, as we are not audience measurement experts we have limited our report to outlining methods used and have not assessed the efficacy and suitability of these methods and do not provide conclusions on which methodology is suitable for the South African environment.

2 MEASUREMENT OF CLASSICAL BROADCASTING PLATFORMS

4 There are broadly two technologies that are being used currently to measure viewership and viewership patterns on classical broadcasting platforms – People Meter and Return Path Panel technologies. These differ in that the former monitors individual viewing behaviour and the latter measures a device, usually a set top box. Each of these technologies will be discussed below.

2.1 PEOPLE METER TECHNOLOGY

5 People Meters are devices that are used to measure the television viewing habits of individuals and households within a sample. It measures what media is being used and by whom, providing constantly updated, detailed data on viewership patterns matched with the demographic characteristics of the viewer. A People Meter typically works as follows:

5.1 When watching television, each member of the household is expected to register their presence by pushing an identification button on the People Meter's handset. The meter monitors registrations made by the different members of the household and monitors which channel the television is tuned into while an individual is registered. When the individual stops watching he/she presses a button again.

5.2 The registration and viewing information is then stored on the People Meter. Data is transmitted overnight over telephone lines or radio transmitters to a central repository.

5.3 Once the data has been collected, it is processed. As only a sample of the total television household population is monitored, weightings are applied to the data in order to arrive at the estimated viewership figures for the population.

6 The People Meter is well-suited to measuring viewership as it links the programmes being watched directly with the individual watching it, allowing for a detailed study of audience demographics. Unlike diaries which rely on an individual's capacity to recall, People Meters simply require the viewer to register their presence, before automatically collecting accurate data on viewing behaviour.

7 Despite these benefits, the People Meter has some limitations

7.1 *Firstly*, it requires that people register on the system when they are watching television and de-register when they leave. This leaves room for human error. For example, if a viewer plans to only watch a programme for a short period of time

(for example, a news broadcast in the morning before work), they might not activate the system to record their viewing. This would lead to inaccuracies in the data recorded.

7.2 *Secondly*, the sample size required for results to be meaningful in a panel of this type can be quite high. This is particularly true in a multi-channel environment in which audience size for niche channels can be extremely low. This increases the cost of the measurement technique.

8 Despite these limitations, the People Meter technology is widely used for television audience measurement.[1] The People Meter is the primary platform for audience measurement in South Africa, especially in the free-to-air broadcasting industry. The current panel has about 1,600-1,700 households. Of this number, 400 are in the pay television segment.

2.1.1 DEVELOPMENTS IN PEOPLE METER TECHNOLOGY

9 Initially People Meter technology was designed to identify channels once activated based on the frequency of analogue signals. The advent of newer video technologies such as digital broadcasting (which offer multiple channels on the same stream) and time-shifted viewing made it more difficult for People Meter technologies to accurately identify the programme being watched.

10 To address this issue 'watermarking' was introduced. 'Watermarking' refers to a process in which inaudible codes are embedded into audio and video content. These codes are embedded in a manner that it is undetected by the viewer and does not interfere with the quality of the content. When the content is being viewed, the meter is able to detect these codes and thereby record the content being viewed, the platform being used, and the extent of time-shifted viewing. Media that is encoded can be identified by obtaining an audio signature that is later matched to a library of material.

11 An innovation using the audio code technology is the active/passive meter also known as the A/P meter. This meter has the ability to track the tuning of the television regardless of the format of the signal – analogue, digital or a combination of both. It is a complementary device to the People Meter in that where the People Meter identifies who is watching television, the A/P meter detects which programme is being watched.

12 The device works by reading audio and video codes that have been embedded in the television signal. Both audio and video codes will be used for analogue identification, whilst only audio codes are used for digital and high definition signals.

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[1] Webster, J. G., "People Meter" Northwestern University, available at: http://www.soc.northwestern.edu/webster/pubs/Webster%20(2008)%20People-Meter.pdf

13 An important feature of the A/P Meter system is that it is able to detect how the TV is being used, ie. it can detect if the TV is used for analogue, cable, DTH, VCR, video game usage, PVR, or if the set is connected to the Internet.[2]

14 The invention of watermarking and active/passive technology has led to the development of platform neutral audience measurement technologies and the Portable People Meter.

2.1.2 PLATFORM NEUTRAL PEOPLE METERS

15 As technology has increased the number of viewing platforms available, People Meter Technology has evolved to measure viewership across the different broadcasting platforms such as DTH, DTT and IPTV. These often use some form of active passive technology. Two platform-neutral People Meters are discussed below.

a) Unitam Meter

16 The Unitam meter was developed by Nielsen and is based on content tracking technology that is able to track content being viewed on a television set. The meter enables the tracking of different platforms by having ports that can connect to different media devices. The meter works in the following way: it detects the port from which the signal on the screen is generated and captures audio signatures from the signal during the time that the port is active. These signatures are then transmitted via a modem to a central database, where these signatures are used to identify the content being viewed.[3]

17 One of the alleged benefits of this device is that it is able to identify channels transmitted on any platform whether the content is live or time-shifted. Also, it does not require the cooperation of broadcasters in order for content to be identified.

18 According to the providers of Unitam technology, the Unitam platform neutral meter is used in a variety of countries. It was introduced in the UK in 2006 and is being used to provide statistics on “on-demand” cable viewing. It is installed in the full panel of 5 200 households in Italy[4]. It is rolled out in 5 540 households in China and is being trialed in Australia[5] (in which it is expected that by February 2010 time shifted viewing will be reported).

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[2] Whiting, Susan. 2005. “Providing a Road Map for the future.”

[3] Unitam website. Available at http://www.unitam.tv/capturing_devices.html

[4] Unitam’s website. Viewed at http://www.unitam.tv/news.html on 25th March 2009

[5] Unitam’s website. Viewed at http://www.unitam.tv/news.html on 25th March 2009

b) TVM5

19 The TVM5 is another people meter that measures viewership across different platforms using active/passive technology. This device differs from the Unitam in that it does not connect directly to the television or set top box. It has sensors that are able to pick up signals from the television if placed on top of the television set. The meter uses a number of methods to identify the channel and content. The information recorded by the meter is transmitted to the central database via either landlines or GSM/GPRS networks and is then processed.

20 A less expensive version of this meter, the TVM5 Lite, was developed for countries that could not afford to roll out the platform neutral TVM5 meter. This base model of the device can measure analogue platforms and can be upgraded to the digital detection capabilities of the TVM5 model. This means that the meter can be upgraded in line with the developments of other platforms.

21 According to the developers of the TVM5 meter, it has been introduced to 11 countries. It was introduced to India in 2006, as the introduction of DTH and IPTV platforms had created new challenges for audience measurement in the country. However, the proportion of television viewers using these technologies is low and only as these technologies become more popular will the sample size of these viewers be statistically significant.[6]

2.1.3 PORTABLE PEOPLE METER

22 The Portable People Meter (PPM) is a technology that allows the measurement of an individual's exposure to various media such as radio and television both within and outside the home. The traditional People Meter cannot measure such exposure as it is connected to the television in the home. The PPM is a passive device about the size of a pager, small cell phone or wrist watch, which detects the codes embedded in media to identify the platform and content that the individual is exposed to.

23 The device is worn the entire day by the individual like a pager would be. At the end of the day, the individual would place their meter in the recharging unit which would capture the data and transmit it to a central repository. The PPM is an entirely passive technology. While it needs to be carried around and docked overnight, it does not require any other activation.

24 Benefits of the system are that it is portable, and therefore measures all media that an individual is exposed to out of the household environment as well as that within the

[6] Shah, Gouri and Bhatia, Rahul. (2007) "New tech adds twist to TV viewership measurement." Viewed at http://www.livemint.com/2007/07/09001753/New-tech-adds-twist-to-TV-view.html on 6 March 2009.

household. In addition, it can be used as a multimedia panel in that it can measure radio and television through the same technology and panel. It can also track time-shifted viewing, VOD audiences, and provide minute-level audience flow insights. Nielsen has also developed device neutral PPM's called "Solo Meters" that they claim are able to measure individual behaviour whether the viewer is using Bluetooth technology or some other form of wired connection. This device would passively monitor the communications between mated Bluetooth devices[7].

25 However, according to some analysts this technology has several limitations:[8]

25.1 Panel rotation is higher than with the traditional people meter as individuals are asked to bear the burden of wearing the PPM all the time.

25.2 A higher number of individuals need to be sampled due to the lower participation times of individuals.

25.3 A higher number of devices are required, as each individual needs to be provided with one. With the home-based panel, a number of individuals are tracked in one home.

25.4 Devices may be limited in their ability to read signals where the signal has been degraded due to factors such as noise in the immediate surrounding area, equalisation and mismatching issues.

26 In addition, one of the major criticisms of the PPM is that it does not actually measure what the consumer is watching or listening to, it only captures what the individual is exposed to. The argument is that when an individual walks into a store which has a television programme on, the PPM picks this up, regardless of whether the customer is actually watching or listening to that program for the period in which they are in the store.[9]

27 The PPM is apparently used in numerous countries. It has been used for multimedia panels (radio and television) in the UK, Canada, Kenya, Belgium and the US and has been used for television ratings alone in Norway, Singapore and Kazakhstan.[10] It is currently being trialled in France.

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[7] Nielsen's website. "tracking portable media devices" viewed at http://www.nielsenmedia.com

[8] Falcon, F. 2005. "A cost effective approach for measuring out-of-home viewing"

[9] Hinckley, David. 2008. "People Meters stir a sound argument" NY Daily News.

[10] Business Wire, 22 May 2006, "Arbitron Portable People Meter System Selected for Groundbreaking Meter Panel for Radio and Television in the United Kingdom"

2.2 RETURN PATH PANEL

28 A Return Path Panel (RPP) is another technology used for audience measurement. It differs from the people meter in that it monitors the *device* that is connected to the television and records the channel changes or clicks on the remote. The system is contained in the decoder or set top box which also stores the recordings. The data is transmitted via a modem to a central repository.

29 One of the reported advantages of the system is that it is completely passive and therefore can be rolled out to a greater number of households due to the lower cost per household. This is especially important in a fragmented environment where the sample sizes for smaller channels are too small to be significant in an overall People Meter survey or require larger People Meter survey samples making them more expensive.

30 The RPP system is also able to track time-shifted viewing via a PVR or VOD, and could track use of applications[11].

31 One issue with the RPP method is that the system records the set top box rather than the television. As a result, if the STB was left on, it would continue recording the last channel that was watched even if nobody was actually watching it. In order to account for this, capping algorithms are applied to the raw data captured based on the general behaviour of the household. These algorithms are developed through an initial detailed questionnaire that the household fills in when they join the measurement project. In addition, in order to check the accuracy of the data, households may also be provided with a diary to fill in on a daily basis in the first few weeks to indicate *when* they watched television. The diaries are then compared to the RPP recordings to determine their viewing repertoire which then becomes the algorithm that is applied to the household thereafter.[12]

32 In South Africa DStv is developing the DStv-i Panel, which will be the first return path panel in Africa. The DStv-i panel has been signed with TNS on a 5 year contract, subject to renewal after 3 years. It works as follows:

32.1 The decoder tracks the channel it is tuned into and thereby records every click on the remote.

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[11] Timeshifted viewing is dealt with by adding the viewership figures of the live broadcast to the viewership figures within the first 48 hours of the recording that is referred to as VOSDAL (Viewed on same day as live) and VOSDAL+1 (Viewed on same day as live or the next day). This viewership is added back to the live viewership figures to get the full viewership. This is the internationally accepted methodology.

[12] Interview with Mr. Peter McKenzie of Oracle.

32.2 Modems plugged into the decoders are transmit the data through a GPRS by MTN to TNS in London.

32.3 At TNS algorithms are applied to ensure that the data reflects actual viewing before the data is processed and released.

33 Internationally, BSkyB and TNS in the UK were the first to measure audience viewership using the RPP in 2006. The RPP panel was called the Skyview Panel and currently comprises 38 000 to 40 000 households. The apparent success of the panel was due to the high uptake which was achieved by Sky offering set top boxes free to households if they were connected to a telephone line. After the rollout of the RPP system in the UK, it was launched in New Zealand.[13] Further, it seems that the return path panel will be introduced by Foxtel and Austar, subscription television providers in Australia. It is expected that it will cover 10 000 subscription television households. Foxtel estimates that the subscription television survey base is likely to be eight times higher than the current national audience measurement panel for subscription television. This RPP system will also measure time-shifted viewing and viewers' reactions to interactive advertising.

[13] TAMS, Return Path Data and Portable People Meters, Keld Nielsen. TNS Media Research Presentation. March 2009

3 AUDIENCE MEASUREMENT OF NEW TECHNOLOGIES

3.1 MEASUREMENT OF MOBILE BROADCASTING:

34 While mobile broadcasting is relatively new, in various markets attempts are being made to accurately measure mobile broadcasting. As mobile phones are devices, and are generally used by one individual it may be possible to accurately measure what is being viewed on the device and to link that with the demographic characteristics of that individual to provide an accurate picture of viewing behaviour. While the exact technologies have not been disclosed it appears that internationally companies are measuring device traffic.

34.1 In the US, NBC Universal a media and entertainment company together with Rentrak Corporation is trying to monitor, view and analyse anonymous mobile data for the consumption of video and other downloads.[14] This is using a service called "Mobile Essentials" which analyses and tracks mobile content data in different forms including video clips as well as SMS services, ring tones, and other mobile content.

34.2 In the UK, the GSM Association and the five major mobile operators in the UK (Orange, T-Mobile, Vodafone UK, O2 and 3) have begun working together to develop an audience measurement system to measure traffic and usage of mobile media services. The GSM plans to roll out the system in the latter half of this year. However, the technology used for this system has not been disclosed.[15]

34.3 MediaMetrie, a French audiovisual and digital media audience measurement company, is aiming to measure the use of mobile TV in France. Two technologies were chosen. Firstly, FastCollection is a system that is integrated with the cell phone.[16] Secondly, a SIM-based system where the SIM card measures the

[14] Rentrak website. "Rentrak launches Digital Download Essentials Service with Measurement Partner NBC Universal. Available at http://www.rentrak.com/section/corporate/newsroom/press_release_detail.html?release_no=715

[15] Glaister, M. 2008. "Mobile body looks to create traffic measurement system." Media Week Website. Available at http://www.mediaweek.co.uk/news/849847/Mobile-body-looks-create-traffic-measurement-system/ and O'Carroll, T. "Mobile industry to launch audience measurement system." Media Week Website. Available at http://www.mediaweek.co.uk/news/881120/Mobile-industry-launch-audience-measurement-system/

[16] Expway, 2009" "ExpWay FastCollection chosen by MediaMetrie for its audience measurement services on Mobile Tv" Expway document.

viewing of certain programming or channels and identifying mobile TV prime times.[17]

35 It is expected that measurement of mobile broadcasting will rise as the take-up of mobile broadcasting increases.

3.2 MEASUREMENT OF INTERNET TELEVISION

36 In addition, there are several attempts to measure video Internet usage. This is often done in conjunction with companies that currently do audience measurement of the Internet in an attempt to marry the ratings of content that is viewed via the television and the Internet. Like mobile broadcasting, these measurement tools are generally focused on measuring the device rather than the individual.

37 In the US, Nielsen//NetRatings has introduced an Internet audience measurement service. The viewership data from Internet usage is combined with data from the People Meters to provide a single panel measuring the convergence of TV and Internet products. The system tracks and reports video streaming and web site usage from all national broadcast networks, cable networks, Internet companies and local broadcasting stations and cable networks. It is planned that the software will be installed on the personal computers of existing and new people meter participants on a voluntary basis.[18]

38 Rentrak in conjunction with NBC Universal in the US also has technology that analyses the television content purchased by consumers and downloaded via the Internet through its “TV Essentials” service.

39 It is also expected that the increased convergence of Internet and television usage will prompt increased research and collaboration between agencies that measure television and those that measure the Internet.

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[17] Business Wire. 2009. Mediametrie selects Gemalto’s SIM-based solution for audience monitoring. Available at http://findarticles.com/p/articles/mi_m0EIN/is_2009_Feb_17/ai_n31355952

[18] Nielsen’s website “Integrating TV & internet Measurement” viewed at http://www.nielsenmedia.com on 6 March 2009.

4 CASE STUDIES

40 Internationally, many of the newer technologies have already been adopted by some countries. It is interesting to understand how some of these countries are tackling the issues of audience measurement introduced by the newer broadcasting platforms. One of the key trends is that countries are using a range of different complementary measuring techniques to provide greater insight to consumer behaviour. We examine the techniques used in two key markets, the UK and the US.

4.1 UNITED KINGDOM

41 In the UK there are several different complementary audience measurement tools being used:

41.1 People Meters that are platform neutral and can measure time-shifted viewing and VOD;

41.2 Portable People Meters which operate in parallel to other systems but are not integrated; and

41.3 Return Path Panels.

41.4 In addition, a system for the measurement of mobile broadcasting is set to be introduced by mobile operators.

42 *People Meters:* Broadcasters' Audience Research Board (BARB) is the organisation responsible for providing statistics on television audiences in the UK. The information it provides covers channels and programmes viewed in the UK and the demographics of the people watching particular channels and programmes. Viewing data is collected second-by-second and reported on a minute-by-minute basis. These estimates are obtained from a reporting panel of 5 100 television households which are chosen to represent the viewing behaviour of the over 25 million TV households within the UK.

43 People Meters have been used since 1981 to measure television viewership. The platform neutral Unitam meter was introduced in 2006 to enable the measurement of viewership across different (home based) platforms as well as emerging ones. This device also enables the measurement of time-shifted viewing and video on demand.

44 *Portable People Meters:* In 2006, the Portable People Meter was used for the measurement of electronic radio and television viewership in London. The study was to cover about 50 national and local radio stations and television channels across four platforms – analogue, digital radio, digital television and the Internet. This system

operates in parallel to other measurement systems and will not be integrated with other datasets. It is not a primary measurement tool.

45 *Return Path Panel:* The Return Path Panel system is also used in the UK to estimate television viewership. It was developed by BskyB and was launched in 2006. The system has been rolled out to some 40000 digital households.

46 *Mobile measurement:* As mentioned previously, the GSM Association and the five major mobile operators in the UK are currently working to develop an audience measurement system measuring traffic and usage of mobile media services.[19] While details have not been disclosed this is likely to be focused on monitoring the device.

4.2 UNITED STATES

47 Like the UK, in the US complementary audience measurement tools being used:

47.1 People Meters;

47.2 Portable People Meters; and

47.3 Return Path Panels.

48 *People Meters:* People Meters are used in the US. The national sample of People Meters is representative of a cross section of US households. People Meters are also used to measure more localised markets.

49 *Personal People Meters:* The PPM is also used in Philadelphia, Houston and New York and was launched there in 2007. Arbitron estimates that there are approximately 28,000 people on their PPM panel in the USA[20]. There are plans to be launch the PPM in all states by 2010.

50 *Return Path Panel:* The Return Path Panel has also been used by a number of broadcasters for audience measurement in the US. These include Charter LA which covers 300 000 households and was launched in 2006, Direct TV which covers 3 million households and was launched in 2007, Comcast Huntsville's RPP which was launched

[19] Glaister, M. 2008. "Mobile body looks to create traffic measurement system." Media Week Website. Available at http://www.mediaweek.co.uk/news/849847/Mobile-body-looks-create-traffic-measurement-system/ and O'Carroll, T. "Mobile industry to launch audience measurement system." Media Week Website. Available at http://www.mediaweek.co.uk/news/881120/Mobile-industry-launch-audience-measurement-system/

[20] Arbitron's website. Available at http://www.arbitron.com/portable_people_meters/home.htm

in 2008 and DirectView which was launched in 2008 with a panel of 100 000 households (and measures both live and PVR viewing).[21]

51 *Cross platform:* NBC utilised a cross-platform measurement system called TAMi in the Beijing Olympics to measure usage and interaction across television, internet and mobile platforms. It is now being used to measure viewings across different television platforms, the Internet, VOD, and mobile, to create a more realistic picture of the actual number of viewers.[22]

52 *Internet measurements:* Nielsen//NetRatings has introduced an Internet audience measurement service which tracks People Meter participants use of Internet video products such as video streaming as well as web site usage. This will create a converged Internet and broadcast panel[23]

53 *Mobile measurement:* Rentral in conjunction with NBC is monitoring mobile broadcast data based on mobile data monitoring mechanisms. [24]

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[21] TNS Media Research. Available at http://www.tns-mr.com/services.htm#view

[22] "NBC's TAMI- a complete picture that's hazy- and that's good" http://www.mediapost.com/publications/?fa=Articles.showArticle&art_aid=92846

[23] Nielsen's website "Integrating TV & Internet Measurement" viewed at http://www.nielsenmedia.com on 6 March 2009.

[24] Rentrak website. "Rentrak launches Digital Download Essentials Service with Measurement Partner NBC Universal. Available at http://www.rentrak.com/section/corporate/newsroom/press_release_detail.html?release_no=715

5 CONCLUSION

54 Our desktop research suggests that internationally the primary audience measurement tool remains the People Meter. However, the People Meters used are being advanced to better measure audiences across multiple platforms, and to measure time-shifted and on-demand viewing. Return Path Panels are to a large extent being used by subscription broadcasters to complement the People Meter and to cope with channel fragmentation. However, the Return Path Panel could also be used more widely in the context of DTT as set top boxes become the norm. In addition, there is some experimentation with Portable People Meter's and device-based measurement of mobile TV and measurement of television viewed over the Internet. However, at present these tools are largely complementary and have not replaced the in-home measurement systems.